

POPOV, I.

Current results of experimental taxation of spindle trees. p. 227.

Vol. 11, no. 5, May 1955
GOESKO STOPANSTVO
Sofiya, Bulgaria

So: Eastern European Accession Vol. 5 No. 4 April 1956

POPOV, I.

AGRICULTURE

Periodical KOOPERATIVNO ZEMEDELIE. No. 10, Oct. 1958.

POPOV, I. Hillside areas, suitable for rotation of crops. p. 22.

Monthly List of East European Accessions (EEAI) LC, Vol. 8, no. 3, March, 1959, Uncl.

POPOV, I. Dr.

Metodika Sostavleniia Inzhenerno-Geologicheskikh Kart (Methods for Making of Geological Maps - Handbook with a Set of Maps)

2.50

SO: Four Continent Book List, April 1954

APPROVED FOR RELEASE: Tuesday, August 01, 2000

CIA-RDP86-00513R001342

BULGARIA/Chemical Technology - Chemical Products and Their Application - Treatment of Natural Gases and Petroleum. Motor and Rocket Fuels. Lubricants.

Abs Jour : Ref Zhur - Khimiya, No 3, 1958, 9306

Author : Dimitrov D., Popov I.

Inst : Chemical Technological Institute.

Title : Type Composition of Sulfur Compounds and Their Distribution in the Fractions of Gasoline Produced from Tar of Low Temperature Carbonization of Bulgarian Coal.

Orig Pub : Godishnik khim.-tekhnoi. in-ta, 1955 (1956), 2, No 1, 133-143

Abstract : In the gasoline fraction of the tar obtained on low-temperature carbonization, in a tunnel furnace, of humic-sapropelite coal from the "Chernoye more" mine, were determined according to the method of Farager, Morel and

POPOV, I.

BULGARIA/Chemical Technology. Chemical Products and Their
Application. Treatment of Natural Gases and
Petroleum. Motor and Rocket Fuels. Lubricants.

H

Abs Jour: Ref Zhur-Khin., No 13, 1958, 44578.

Author : Popov Y., Delichev P.

Inst :

Title : Production of Some Grades of Light and Medium
Industrial Oils in Atmospheric Petroleum Distillation
Units at the Town of Rusa (Bulgaria).

Orig Pub: Tezhka promishlenost, 1957, 6, No 8, 36-38.

Abstract: The possibilities are considered of expanding the
production range of oils manufactured at the
petroleum distillery in the town of Rusa from
Tyulenov petroleum, and of the work that would be

Card : 1/2

POFOV, I. ; ZAGORSKI, D.

Necessity of standards in the turnover assets of construction enterprises. p. 17.

Vol. 2, no. 4, 1955
STROITELSTVO
Sofiya, Bulgaria

So: Eastern European Accession Vol. 5 No. 4 April 1956

POPOV, I.

Need for creating repair shops for measuring instruments. p. 46.

RATSIONALIZATSIYA. Vol. 6, no. 2, Feb. 1956

Sofia, Bulgaria

SOURCE: East European Accessions List (EEAL) Library of
Congress, Vol. 6, No. 1, January 1957

POPOV, I.

POPOV, I. Tasks and organization of the measuring laboratories and control-testing centers in machine-building enterprises. p. 41. Vol. 6, no. 7, July 1956. RATSIONALIZATSIA. Sofia, Bulgaria.

SOURCE: East European Accessions List (EEAL) Vol 6, No. 4-- April 1957

POPOV, I.; ZANEV, K.

"Consolidating the construction organizations."

p.1 (Stroitelstvo, Vol. 5, no. 1, 1958, Sofia, Bulgaria)

Monthly Index of East European Accessions (EEAI) LC, Vol. 7, No. 8, August 1958

POPOV, I.

TECHNOLOGY

Periodicals: STROITELSTVO. Vol. 5, No. 10, 1958.

POPOV, I. New norms for additional expenditure in the construction industry.
p. 13.

Monthly List of East European Accessions (EEAI) LC Vol. 8, No. 4, April 1959.
Unclass.

POPOV, I.

"Concerning the condition of the measuring instruments in the machinery-construction industry"

Tezhka Promishlenost. Sofia, Bulgaria. Vol. 8, no. 1, Jan. 1959

Monthly list of East European Accessions (EEAI), LC, Vol. 8, No. 6, Jun 59, Unclass

POPOV, I.; DIMOV, D.

Hematoma of the mesovarium ovarii simulating torsion
of an ovarian cyst. Akush. ginek. (Sofia), 4 no.4:339-340 '65.

1. Visssh meditsinski institut, Varna, Katedra po akusherstvo i
ginekologiya (rukov.: doc. G. Iliev).

POPOV, I. (Orenburgskaya oblast')

When a comrade is in danger. Kryl. rod. 15 no.12:7 D '64.

(MIRA 18:3)

POPOV, Ivan, inzh.

Measurement techniques. Ratsionalizatsiia 14 no. 2:35-39
'64.

POPOV, I.

Cooperation of socialist countries in the field of ~~power~~ re-
sources. Vop. ekon. no.10:111-122 0 '63. (MIRA 16:12)

POPOV, I., polkovnik

Tankmen attack on the march. Voen. vest. 42 no. 3:20-23
Mr '63. (MIRA 17:1)

POPOV, I., vrach

Self-help and mutual aid in the area of nuclear contamination.

Voen.znan. 39 no.9:33-35 S '63.

(MIRA 16:10)

POPOV, Iv., prof. inzh.

For a rational use and economy of electric energy in industries.
Tekhnika Bulg 3 no.4:4-7 Ap '54.

MONDESHKI, M.; RADANOV, R.; POPOV, Iv.; SLAVOV, G.; DOBREV, P.;
PASHMAKOV, Iv.

Remote results of the treatment of tuberculous meningitis
in adults. Nauch. tr. vissh. med. inst. Sofia 41 no.7:35-47
'62.

1. Predstavena ot prof. M. Mondeshki.
(TUBERCULOSIS, MENINGEAL)
(ANTITUBERCULAR AGENTS)

POPOV, Iv.

The new factory cost prices, a means of improving the work of the enterprises in nonferrous metallurgy. Min delo 17 no.6:35-38 '62.

1. Upravlenie, "Tsvetna metalurgii i rudodobiv".

POPOV, Iv.; SLAVOV, G.

A rare case of diaphragmatic hernia. Suvr. med. 13 no.6:
39-42 '62.

1. Iz Klinikata po ftiziatrila pri VMI [Vissh meditsinski
institut] - Sofia (Rukov. prof. M. Mondeshki)
(DIAPHRAGMATIC HERNIA)

POPOV, Iv.

A case of combined cancer and tuberculosis of the lung. *Suvr.*
med. 13 no.8:39-41 '62.

(LUNG NEOPLASMS)
(TUBERCULOSIS, PULMONARY)

BRUDKOV, N.; POPOV, I.

Important element of economic work. Fin. SSSR 23 no.12:61-62
D '62. (MIRA 16:1)

1. Nachal'nik sektora Belgorodskogo oblastnogo finansovogo
otdela. (for Brudkov).

(Belgorod Province—Finance)

POPOV, I.; AFANAS'YEVA, V.; SUKHOVA, G.

Laundering linen without boiling it. Zhil.-kom.khoz. 12 no.2:
24-25 Ag '62. (MIRA 16:2)

(Laundry)

POPOFF, J. [Popov, I.]; LILOV, D.

Effect of gibberellin acid on the crop of grapes and its quality.
Doklady BAN 15 no.5:567-570 '62.

1. Note présentée par A. Popoff [Popov, A.], membre de l'Académie,
membre du Comité de rédaction, "Doklady Bolgarskoy Akademii
nauk".

POPOV, Iv., inzh.

The phytoncides. Nauka i tekhnolozhiya no.9:3-4 S '57.

MONDESHKI, M. L., prof.; POPOV, Iv.; IVANOV, Iv.

Silicotuberculosis. Izv. inst. klin. obsht. med. 4:241-252 '60.

(SILICOSIS compl)

(TUBERCULOSIS PULMONARY compl)

ZAKHARIYEV, N.; BAKRACHEV, N.; POPOV, I. (Bolgariya)

Acute poisoning by explosion gases. Gig. truda i prof. zab.
4 no.12:45-47 D '60. (MIRA 15:3)

1. Dimitrovskaya bol'nitsa dlya shakhterov.
(MINE GASES--TOXICOLOGY)
(BLASTING--HYGIENIC ASPECTS)

COUNTRY : BULGARIA II
 CATEGORY : Chemical Technology. Chemical Products and Their Applications. Food Industry
 ABS. JOUR. : Rzhkhim., No 19, 1959, No. 69583
 AUTHOR : Kolev, M.; Ponov, I.; Doganova, L.
 INSTITUTE : -
 TITLE : Changes of Weight and of Chemical Composition of Garlic as a Function of Storage Conditions
 ORIG. PUB. : Izv. In-ta rasteniyevdstva. Bulg. AN, 1958, kn. 6, 57-67
 ABSTRACT : Samples of summer (SG) and of winter (WG) garlic, grown under identical conditions, were stored at 2°, 12-14°, and 26° under non-controlled conditions. It was established that SG has considerably better storageability than WG regardless of the storage temperature. The storageability of WG is improved at lower storage temperatures. At approx. 0° it approaches storageability characteristics of SG. A more marked and rapid reduction of WG is explained by a more extensive evaporation of water and by a higher activity of certain fermentation components (invertase, catalase, peroxidase) that is revealed by an accelerated "breathing" of the WG.

Card:

1/1

II - 126

POPOV, I.

SCIENCE

Periodical: IZVESTIYA. BULLETIN Vol. 8, 1957

POPOV, I. Photocolorimetric researches on the changes in dye-absorption function of the reticulo-endothelial system under conditions of complete deprivation of food. p. 291.

Monthly List of East European Accessions (EEAI), IC. Vol. 8, no. 2
February 1959, Unclass.

POPOV, I.; DUBLEY, I.

"On the impregnation of the coils of electric transformers with lac."

p. 20 (Elektroenergiia, Vol. 9, no. 3, 1958, Sofia, Bulgaria)

Monthly Index of East European Accessions (MEAI) IC, Vol. 7, no. 9,
September 1958

POPOV, II.

On the problem of the treatment of vasomotor rhinitis (Preliminary communication). Khirurgiia, Sofia 13 no.12:1087-1091 '60.

1. Gradska bolnitsa "Boian Chonos," Vidin. Gl.lekar: L.Stoianov.
(HAY FEVER ther)

POPOV, I.

Together with active workers. Okhr.truda i sots.strakh. no.7:49
Jl '59. (MIRA 12:11)

1. Obshchestvennyy inspektor vagonnogo depo stantsii Tatarskaya.
(Tatarskaya--Railroads--Repair shops)

POPOV, Ivan, dots. arkh.

Teaching of architecture in the Soviet Union. Arkhitektura 8 no.3:
37-40 '61.

POFOV, I. A.

Ob Odnom Sposobe Postroyeniya Algebraicheskikh Krivyykh. I., Trydy Nauchnotekhn. Konfer. Voenno-transp. Akad., SB. 2 (1938), 33-44.

Ob Odnom iz Obshchikh Metodov Obrazovaniya Algebraicheskikh Krivyykh Vysshikh Poryadkov Pri Pomoshchi Puchkov. M., Trudy # 1 inta Mekhaniz. i Elektrif. S. KH., (1939), 133-138.

SO: Mathematics in the USSR, 1917-1947
edited by Kurosh, A.G.,
Markushevich, A. I.,
Rashevskiy, P. K.
Moscow - Leningrad, 1948

1000-1000

AUTHORS: Grum-Grzhimaylo, N. V., Popov, I. A. 78-3-5-29/39

TITLE: The Hall Effect in the Alloys of Chromium With Molybdenum
(Effekt Kholla v splavakh khroma s molibdenom)

PERIODICAL: Zhurnal Neorganicheskoy Khimii, 1958, Vol 3, Nr 5,
pp 1227-1231 (USSR)

ABSTRACT: The dependence of the constant of the Hall effect on the composition of the chromium-molybdenum system was investigated. All alloys in concentrations of from 0 to 100% molybdenum form continuous solid solutions. Chemical compounds of the following formulae: Cr_5Mo , Cr_3Mo , CrMo_2 and Cr_2Mo_5 are formed between the components of chromium and molybdenum. The occurrence of new phases is possible in the formation of these chemical compounds, provided that the thermodynamical conditions with which separation and crystallization of the new phase can be achieved, are satisfied. There are 3 figures, 2 tables, and 1 Polish reference.

Card 1/2

The Hall Effect in the Alloys of Chromium With Molybdenum 70-3-9-29/39

SUBMITTED: May 15, 1957

AVAILABLE: Library of Congress

1. Chromium-molybdenum alloys--Hall effect 2. Chromium-molybdenum
alloys--Phase studies 3. Hall effect

Card 2/2

POPOV, I.A., kandidat tekhnicheskikh nauk.

Voroshilovgrad scientific and technical conference. Ugol' 32
no.2:46 P '57. (MLRA 10:3)
(Coal mines and mining)

POPOV, I. A., Docent

Cand. Technical Sci.

"Experiment in Developing the Analytic Principles for Construction the Operating Surfaces of Plows by Technological Parameters." Sub 18 May 51, Moscow Inst for the Mechanization and Electrification of Agriculture imeni V. M. Molotov

Dissertations presented for science and engineering degrees in Moscow during 1951.

SO: Sum. No. 480, 9 May 55

POPOV, I. A.

POPOV, I. A. -- "Calculation of Required Traction Forces for a Rock of Coal During the Use of Statistical Planes and Basic Parameters of the Structures of Planes for Thin Beds." Sub 12 Jan 78, Moscow Mining Institute I. V. Stalin. (Submitted for the Degree of Candidate in Technical Sciences)

80: Vechnaya Moskva, January-December 1952

POPOV, I.A., otv. red.

[Mechanization of auxiliary operations in coal mines; a survey] Mekhanizatsiia vspomogatel'nykh rabot na ugol'nykh shakhtakh; obzor. Moskva, 1962. 229 p.
(MIRA 17:7)

1. Moscow. Tsentral'nyy institut tekhnicheskoy informatsii ugol'noy promyshlennosti.

CIA-RDP86-00513R0013423

POFOV I. A.

181T77

USSR/Metals - Steel, Production

Dec 50

"Effect of Calcium Oxide Additions on the Behavior of Manganese and Silicon in the Acid Process of Steelmaking," I. A. Popov, B. V. Stark, Corr Mem, Acad Sci USSR, Inst of Metallurgy imeni A. A. Baykov

"In Ak Nauk SSSR, Otdel Tekh Nauk" No 12, pp 1806-1814

Obtains temp relationship of equil consts of Mn and Si and suggests correction factors for calcg these consts considering effect of adding calcium oxide to the acid slag: Introduction of

181T77

USSR/Metals - Steel, Production (Contd) Dec 50

calcium oxide into acid slag noticeably lowers activity of ferrous oxide, but effect varies differently with calcium oxide content increases.

181T77

POPOV, I. A.

1977.

USSR/Metals - Vanadium, Steel Making

Feb 51

"Vanadium in the Acid Steel-Making Process and Its Deoxidizing Capacity," I. A. Popov, B. V. Stark, Corr Mem, Acad Sci USSR, Inst Metallurgy imeni A. A. Baykov, Acad Sci USSR

"Iz Ak Nauk, Otdel Tekh Nauk" No 2, pp 261-266

Investigations of behavior of vanadium in acid process revealed that in open-hearth slag vanadium forms sep phase $\text{FeO} \cdot \text{V}_2\text{O}_3$. Developed formulas for describing reaction of vanadium oxidation in metal bath and to express relation between equil const of reaction and temp during acid process. Deoxidizing capacity of vanadium is lower than that of silicon.

185T84

POPOV, I. A.

3

Vanadium in the Acid Steelmaking Process and Its Deoxidizing Capacity. — I. A. Popov and B. W. Storch. (*Met. u. Hütten Tech.*, 1953, 2, 302-304). In slags consisting of the oxides of iron, silicon, manganese and vanadium, the last constitutes a phase corresponding to the iron-vanadium spinel $FeO.V_2O_5$. — L. J. L.

DL
MET

KULIKOV, Ivan Stepanovich; POPOV, Ivan Alekseyevich; AGEYEV, N.V., redaktor;
SMIRNOV, V.F., redaktor; GOLYATKINA, A.G., redaktor; ATTOPOVICH,
M.K., tekhnicheskii redaktor.

[Using radioactive isotopes in metallurgy] Primenenie radioaktivnykh
izotopov v metallurgii. Pod nauchnoi red. N.V.Ageeva i V.F.Smirnova.
Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po chernoi i tsvetnoi metal-
lurgii, 1956. 260 p. (MIRA 9:6)

1.Chlen-korrespondent AN SSSR (for Ageyev, Smirnov).
(Radioisotopes--Industrial applications) (Metallurgy)

L 33965-65 EWT(m)/EWP(w)/EWA(d)/T/EWP(t)/EWP(b)/EWA(c) IJP(c) JD
 S/0146/65/000/002/0131/0133
 ACCESSION: NR: AP5005848

AUTHOR: Nosyreva, Ye.S.; Popov, K.V.

TITLE: Effect of the Mn/C ratio on the cold brittleness of steel

SOURCE: IVUZ. Chernaya metallurgiya, no. 2, 1965, 131-133

TOPIC TAGS: cold brittleness, manganese steel, carbon steel, steel mechanical property, manganese carbon ratio, perlite formation

ABSTRACT: The relationship, if any, between the Mn/C ratio in steel alloys and their cold brittleness is of great practical importance when recommending types of steel for operation at especially low temperatures. To find out this relationship, two groups of steels were tested by the authors: group A with 0.13% C and Mn contents ranging from 0.12 to 2.26%; group B with 0.05% — 0.25% C and 1.16–1.20% Mn. In the A-group the cold brittleness threshold decreased at a higher Mn/C ratio only if the Mn content was not above 1.2%. Above this level, the threshold moved toward higher temperatures; thus, there is no regular relationship between the Mn/C ratio and the cold brittleness threshold. In the B group, the relationship was clearly observable: with increasing Mn/C ratio, the cold brittleness receded to lower temperatures. Perlite formation (or lack of such formation in Group A) determines the cold brittleness threshold. Thus, the Mn/C ratio has no

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L 33965-65

ACCESSION NR: AP5005848

single-valued influence on cold brittleness. Rather, the carbon and manganese contents influence it independently and in a different manner. Orig. art. has: 1 figure and 1 table.

ASSOCIATION: Institut nefte-i uglekhimicheskogo sinteza pri Irkutskom gosudarstvennom universitet (Petro- and organic chemical synthesis institute, Irkutsk state university)

SUBMITTED: 05Mar64

ENCL: 00

SUB CODE: MM

NO REF SOV: 005

OTHER: 003

Card 2/2

POPOV, I.A., Cand Vet Sci -- (diss) "^{Significance}~~Meaning~~ of serological
studies in the epizootology of ~~LISTERELLOSIS~~ of certain
^{species}~~types~~ of agricultural animals." Stalingrad 1958, 16 pp.
Len Vet Inst of Min of Agr USSR) 150 copies (KL, 39-58, 111)

L 1343-66 EWT(d)/EWT(1)/EED-2 GW/JT/BC

ACCESSION NR: AP5020912

UR/0006/65/000/008/0015/0021
528.517

AUTHOR: Borodulin, G. I.; Sinitsyn, V. A.; Popov, I. A.; Mal'tsev, B. N.;
Plyushchev, A. N. 44,55 44,55 44,55 44,55 47
44
8

TITLE: Results of tests of a prototype of the TD-1 optical range finder 24 10

SOURCE: Geodeziya i kartografiya, no. 8, 1965, 15-21

TOPIC TAGS: geodetic instrument, range finder, geodimeter, TD 1 range finder,
mining survey 44,55,12

ABSTRACT: Two prototypes of the TD-1 small optical range finder, originally developed in 1960 by the Vsesoyuznyy nauchno-issledovatel'skiy institut gornoy geomekhaniki i marksheyderskogo dela (All-Union Scientific Research Institute of Mining Geomechanics and Mine Surveying), to measure distances in the 150—5000-m range with a mean square error ± 1.5 cm, were produced in 1963 and field tested in 1964 by the Electronics Instruments Laboratory of the Institute. Simultaneous testing was carried out with a Swedish NASM-4B geodimeter. Comparative measurements were made against those of the Institute's field comparator, highly precise traverse, second- and third-order triangulation, and invar wires. Subsequent field tests

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L 1343-66

ACCESSION NR: AP5020912

3
were made by an interdepartmental commission set up by the USSR Administration of Measuring Instruments of the State Committee of Standard Measures and Measuring Instruments. Results of these tests showed these instruments to be highly precise. The mean square error of a single measurement for the first prototype was ± 9 mm and for the second ± 16 mm; the systematic error was $+1$ mm and $+8$ mm, respectively; and the mean value of the deviation of the number of waves computed from the total number of waves was ± 0.02 for both prototypes. Orig. art. has: 2 figures and 5 tables. [ER]

ASSOCIATION: none

SUBMITTED: 00

ENCL: 00

SUB CODE: ES, OP

NO REF SOV: 000

OTHER: 000

ATD PRESS: 4092

Card

2/20

ACCESSION NR: AT4040783

S/2657/64/000/011/0203/0213

AUTHOR: Kempe, F., Popov, I. A.

TITLE: Frequency stability of an autogenerator using a tunnel diode in the face of feed voltage fluctuations

SOURCE: Poluprovodnikovyye pribory i ikh primeneniye; sbornik statey, no. 11. 1964, 203-213

TOPIC TAGS: autogenerator, autogenerator stability, germanium diode, frequency stability, tunnel diode, semiconductor device, harmonic generator

ABSTRACT: The purpose of the present paper was to determine the effect of a variation in feed voltage on the frequency stability of harmonic autogenerators using a tunnel diode. The dependence of auto-oscillation frequency stability on feed voltage for a single simple autogenerator arrangement with an external parallel LC oscillatory circuit is analyzed. The circuit elements C_b , L_{choke} and R_{noise} are designed to block and suppress spurious oscillations (see Figure 1, a in the Enclosure). The analysis is made on the basis of the circuit shown in Figure 1, b, with allowance for the non-linearity of the volt-ampere characteristics and the natural capacitance of the junction C_0 , but without consideration of

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ACCESSION NR: AT4040783

the lead inductance L_s or the series loss resistance of the diode r_s . The authors maintain that the effect of the last two factors is of no consequence only on frequencies for which the following inequality is satisfied:

$$|r_s + j2\pi f L_s| \ll R_0 \quad (1)$$

(R_0 is the equivalent resistance of the circuit). For modern tunnel diodes, this inequality is valid for frequencies of less than 100 Mc. Thus, the analysis presented in the article is valid for comparatively low radio frequencies. The effect of junction capacitance and upper harmonics is studied, and experimental investigations are described, the purpose of which was to check the order of frequency stability as a function of feed voltage variation and the dependence of stability on the position of the reference point on the characteristic curve and on the regeneration margin. The authors show that below a certain frequency f' , provided the mode and circuitry have been correctly selected, frequency stability is determined by the upper harmonics. At higher frequencies, frequency stability is impaired because of the capacitance of the junction. The effect of the upper harmonics does not depend on frequency and for realistic circuit Q's and proper modes and circuit arrangements for germanium diodes it gives a frequency stability on the order of $(3 - 5) \cdot 10^{-6}$ for a 10% supply-voltage drift. Other conclusions, together with formulas to express them, are given in the text of the article. Orig. art. has 5 figures, 8 formulas and 1 appendix.

Card 2/4

ACCESSION NR: AT4040783

SUBMITTED: 00

ENCL: 01

SUB CODE: EC

NO REF SOV: 001

OTHER: 002

Card 3/4

ACCESSION NR: AT4040783

Enclosure 01

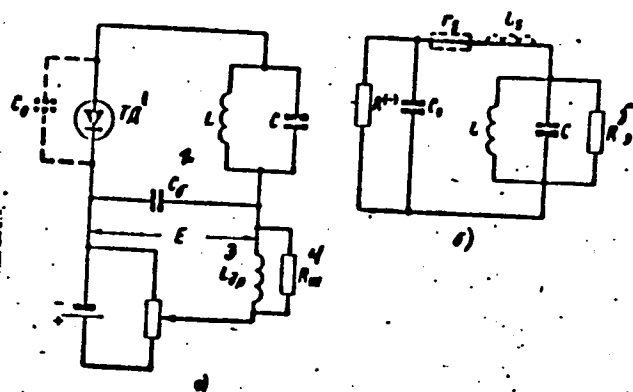


Fig. 1. Autogenerator circuit (a) and equivalent circuit (b): 1 - tunnel diode; 2- C_b ; 3 - L_{choke} ; 4 - R_{noise} 5 - R_{equ} .

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ZAKHAROVA, Galina Vasil'yevna, kand. tekhn. nauk; POPOV, Ivan Alekseyevich, kand. tekhn. nauk; ZHOROVA, Liliانا Pavlovna; FEDIN, Boris Vladimirovich; Primali uchastiye: MUKHINA, Z.S., zasl. deyatel' nauki i tekhn. RSFSR; POPOVA, I.A., zasl. deyatel' nauki i tekhn. RSFSR; YEGOROVA, N.D., zasl. deyatel' nauki i tekhn. RSFSR; NIKITINA, Ye.I., zasl. deyatel' nauki i tekhn. RSFSR; ZHEMCHUZHNAYA, Ye.A., zasl. deyatel' nauki i tekhn. RSFSR; ZHABINA, V.A.; SAVITSKIY, Ye.M., red.; STROYEV, A.S., red.; ARKHANGEL'SKAYA, M.S., red. izd-va; KARASEV, A.I., tekhn. red.

[Niobium and its alloys] Niobii i ego splavy. By G.V.Zakharova i dr. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1961. 368 p. (MIRA 14:12)
(Niobium)

27899
S/078/61/006/010/006/010
B121/B101

18.1152

AUTHORS: Popov, I. A., Shiryayeva, N. V.

TITLE: Constitution diagram of the niobium - copper system

PERIODICAL: Zhurnal neorganicheskoy khimii, v. 6, no. 10, 1961, 2334-2340

TEXT: The alloys of the niobium - copper system were studied by thermal, microstructural, and x-ray analyses; moreover, their hardness and electrical resistance were determined at different temperatures. Based on the results, the constitution diagram of the niobium - copper system was established. The alloys were prepared from electrolytic copper and high-purity niobium. Microstructural analyses showed that alloys containing 0.2 % of niobium are a solid solution of niobium in copper (alpha phase). A two-phase structure ($\alpha + \beta$) was found in copper alloys containing 0.2-97 % of niobium. Alloys containing more than 97 % of niobium are solid solutions of copper in niobium (beta phase). The solubility limit of niobium in copper is ~1.66 % at 1100°C, ~0.45 % at 1000°C, and ~0.2 % at 20°C. The solubility limit of copper in niobium was determined approximately (broken line in the constitution diagram, Fig. 8). An increase of the

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GAL'PERIN, Ye.R., redaktor; GODELEVICH, V.P.; YEVTYANOV, S.I., redaktor;
KRISS, P.Zh.; KUNINA, S.L.; POPOV, I.A.; SHTEYN, B.B., redaktor;
VOLKOVA, T.V., redaktor; VEYNTRAUB, L.B., tekhnicheskiy redaktor.

[Problems on radiobroadcasting installations] Zadachnik po radio-
peredaiushchim ustroistvam. Pod red. S.I.Evtianova i E.R.Gal'perina.
Moskva, Gos. izd-vo lit-ry po voprosam svyazi i radio, 1951. 175 p.
[Microfilm] (MLRA 7:12)
(Radio--Problems, exercises, etc.)

POPOV, I. A.

POPOV, I. A. -- "Problems in the construction of instruments for dynamic measurements with wire transducers." *Engl Tech Sci, Moscow Power Engineering Inst, Moscow 1953. (Referativnyy Zhurnal--Mekhanika, Jan 54)*

SO: SUM 168, 22 July 1954

124-1957-2-1546

Translation from: Referativnyy zhurnal, Mekhanika, 1957, Nr 2, p 15 (USSR)

AUTHOR: Popov, I.A.

TITLE: On the Possibility of Nonlinear Dynamic Distortions in Bridges of Parametric Transducers Fed by a Carrier-Frequency Current (O vozmozhnosti nelineynykh dinamicheskikh iskazheniy v mostakh parametricheskikh datchikov, pitayemykh tokom nesushchey chastoty)

PERIODICAL: V kn.: Eksperim. metody issledovaniya mashin. Moscow, Izd-vo AN SSSR, 1954, pp 113-124

ABSTRACT: The errors of measurements in bridges that can arise during a rapid change of the parameter of a transducer are studied. The analysis is carried out by the method of equivalent circuits. The distortions in capacitive, inductive, and resistive transducers are given. An equivalent bridge circuit is given. The vectorial picture of the distortions is shown. The change of the coefficient of nonlinear distortions in the envelope, as a function of the relationship between the carrier frequency, ω , and the modulation frequency, Ω , is examined. The process is studied in detail on examples of capacitive, inductive, and resistive bridges. The conclusions of

Card 1/2

124-1957-2-1546

On the Possibility of Nonlinear Dynamic Distortions (cont.)

this work indicate the presence of nonlinear distortions in bridges and their dependence on the value of the relationship between the modulation and carrier frequencies. The insignificant magnitude of the distortion for $\Omega / \omega < 0.1$ is noted.

Bibliography: 3 references

V.L. Belotelov

1. Electric bridges--Analysis
2. Transducers--Equipment
3. Transducers
--Performance

Card 2/2

Translation from: Referativnyy zhurnal. Mekhanika, 1957, Nr 3, p 165 (USSR) SOV/124-57-3-3799

AUTHOR: Popov, I. A.

TITLE: Dynamic Measurement Devices With Wire-resistance Gages (Pribory dlya dinamicheskikh izmereniy s provolochnymi datchikami)

PERIODICAL: V sb.: Izmereniye napryazheniy i usiliy v detalyakh mashin. Moscow, Mashgiz, 1955, pp 76-88

ABSTRACT: The author examines the specifications which, in his opinion, must be met by devices operating in conjunction with wire-resistance gages. The most widely used types of such apparatus are compared and evaluated in the light of these requirements. The author developed a device which is equipped with differentiating and integrating circuits and which may be employed as a standard amplifier of alternating currents. However, it is pointed out that combining the function of a carrier-frequency amplifier with that of a low-frequency amplifier results in such a complex circuitry that its use is not justified.

A. M. Turichin

Card 1/1

POPOV, I. A.

USSR/Electricity - Regulation, phase detectors

FD-1673

Card 1/1 Pub. 10-9/11

Author : Popov, I. A. (Moscow)

Title : ~~Theory of ring detector~~ Theory of ring detector in the case of operations upon active load
shunted by a capacity

Periodical : Avtom. i telem., Vol. 16, 96-110, Jan-Feb 1955

Abstract : The author analyzes the operation of a ring detector and investigates its regime and circuit parameters. He notes that phase detectors are extensively employed in many measuring devices and in automatic regulation. He obtains the principal formula for the ring detector, generally represented in the form of six-terminal network and nonlinear. He finds the optimum relations in the detector circuit and efficiency. The experimental verification of the principal formula is discussed. Seven references; e.g. S. N. Inozemtsev, "Detector vector-measuring devices and their design," Elektrichestvo, No 10, 1950; V. N. Zhitomirskiy, "Linear theory of the ring phase detector," Radiotekhnika, No 3, 1952.

Institution : --

Submitted : September 20, 1954

POPOV, I.A.

Transient response in crystal junction triodes during the connection
of a jump voltage. Poluprov. prib. 1 ikh prim. no.2:187-204 '57.
(MIRA 11:6)

(Transistors)

L 26701-66 EWT(1)/EWA(h)

ACC NR: AT5025637

SOURCE CODE: UR/2657/65/000/013/0158/0184

AUTHOR: Bogachev, V. M.; Popov, I. A.

21

ORG: none

BT

TITLE: Optimal operation of a separately-excited transistor oscillator and its calculation [Report at the 19th All-Union Conference of NTORIE, 10 May 63]

SOURCE: Poluprovodnikovyye pribory i ikh primeneniye; sbornik statey, no. 13, 1965, 158-184

TOPIC TAGS: electronic oscillator, transistor oscillator

ABSTRACT: Calculation of the transistor oscillator is given only in the S. M. Gerasimov et al. article ("Principles of theory and calculation of transistor circuits," Sov. Radio, publisher, 1963); no optimal conditions are dealt with, and a number of errors have been found in that article. The present article investigates a common-emitter oscillator circuit with parallel base and collector oscillatory circuits. Permissible values of collector voltage, collector current, junction temperature, and emitter-junction reverse voltage are established; design formulas are developed. It

Card 1/2

UDC: 621.373.52

L 26701-66

ACC NR: AT5025637

is found that: (1) With a specified output, the number and type of transistors can be determined from calculating the maximum transistor power on the basis of the four above permissible parameters; (2) In specified-power calculations, it is expedient to use the maximum oscillator efficiency which is only slightly sensitive to the cutoff angle; here, zero bias is preferable as it simplifies the circuit and lowers emitter voltages; (3) The zero-bias conditions, however, do not ensure minimum dissipated power in the transistor; biasing the transistor may become necessary with a consequent reduction of the cutoff angle; this reduction is efficient only when the power gain is high and oscillatory power low; (4) Reducing the cutoff angle to achieve the minimum dissipated power does not entail substantial increase in the current pulse; however, the emitter reverse voltage considerably increases, and power gain decreases. Orig. art. has: 9 figures and 77 formulas.

SUB CODE: 09 / SUBM DATE: none / ORIG REF: 014 / OTH REF: 001

Card 2/2 *mg5*

L 21307-66 EWT(1)/EWA(h)	SOURCE CODE: UR/0292/64/000/011/0041/0044
ACC NR: AP6006707	
AUTHOR: <u>Popov, I. A.</u> (Engineer)	
ORG: none	
TITLE: Autonomous <u>induction generator</u> excited by variconds	
SOURCE: Elektrotehnika, no. 11, 1964, 41-44	
TOPIC TAGS: induction generator, electric machine, varicond	
<p>ABSTRACT: Known methods of controlling (stabilizing) the voltage of an induction generator either provide step-type control or involve cumbersome saturation reactors and capacitors. A new method is suggested in which a 3-phase induction generator is stabilized (and excited) by a bank of variconds operating on the saturation portion of their $C = f(U)$ characteristic. Experiments with a 3-phase, 3-kw, 200-v, 400-cps, 8000-rpm induction motor operated as a generator in conjunction with 21 VK2-B and 18 VK2-BSh star-connected variconds proved that this method can ensure satisfactory smooth automatic voltage stabilization within the entire zero-to-full-load range. The varicond capacitance is controlled by a 3-phase semiconductor rectifier connected to the generator terminals. Oscillograms and characteristics of the generator operation are supplied. Orig. art. has: 12 figures and 2 formulas.</p>	
SUB CODE:10, 09/SUBM DATE: none / ORIG REF: 002	
Card 1/1	UDC: 621.313.013.8.319.4

L 21767-65 EPF(n)-2/EPA(s)-2/EWT(m)/EPA(bb)-2/EWP(b)/EWP(t) Pt-10/Pu-4 IJP(c)/
 AFWL/ASD(a)-5/SSD/ASD(m)-3/AFEIR JD/WH/JG
 B/0078/64/009/004/0890/0899
 ACCESSION NR: AP4029189

AUTHOR: Popov, I. A.; Rodionova, N. G.

TITLE: The niobium-molybdenum-zirconium system

SOURCE: Zhurnal neorganicheskoy khimii, v. 9, no. 4, 1964, 890-899

TOPIC TAGS: niobium molybdenum zirconium system, metastable phase, martensite, omega phase, phase diagram, microstructure, homogeneous solid solution, hardness, electric resistance, ternary solid solution, heat treatment, thermal stability, oxidation stability, oxide coating

ABSTRACT: The Nb-Mo-Zr system was studied. From the results obtained the isotherms of the solidus surface were constructed (Fig. 1) as well as an isothermal cross section of the ternary phase diagram at 1400C. The microstructure of various alloys in the system were examined; and a number of photographs are included. The hardness and electric resistance of various alloys in the system were also determined. Alloys containing more than 40% Nb have a homogeneous structure of beta-ternary solid solution. This solid solution is very stable; it does not decompose even with prolonged holding of temperatures above 1000C, either in operation

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L 21767-65

ACCESSION NR: AP4029189

or in pressure working or heat treatment. A number of Nb-Mo-Zr alloys have been suggested for application at temperatures over 1000C. Oxidation tests revealed that a binary Nb-Mo alloy with 5-6% Mo had the lowest oxidation rate at 800 and 1000C (5 g/m²hr at 800C). The oxide film on this alloy is dense and adheres tightly to the metal. At 8-10% Mo the oxide film becomes loose and the oxidation rate sharply increases. Alloying Nb-Mo solid solutions with up to 25% Zr lowers the oxidation resistance. Alloys containing 30-70% Zr and not more than 10% Mo have a reduced rate of oxidation (less than 55 g/m² hour); the oxide films that are formed are completely dense, tightly adhering to the metal. Orig. art. has: 2 tables and 10 figures.

ASSOCIATION: none

SUBMITTED: 21Feb63

ENCL: 01

SUB CODE: MM

NO REF SOV: 004

OTHER: 004

Card 2/3

BCRODNIK, G.I.; ILIUSHIN, V.A.; KOLCH, I.A.; MAL'KOV, S.I.; POKHLENKO, V.
I.

Results of testing the experimental model of the TD-1 gasometer.
Lead. i kart. no.8:15-21 Ag 1965. (REF 18:1)

L 14396-65 EWT(m)/EPF(n)-2/EPR/T/EWP(t)/EWP(b) Pg-4/Pu-4 ASD(f)-2/ASD(m)-3
ACCESSION NR: AT4046212 JD/JG/MLK S/0000/63/000/000/0016/0020

AUTHOR: Popov, I. A. (Moscow); Rabezova, V. I. (Moscow) B

TITLE: Investigation of the phase diagram of the Nb-Ti-Al system

SOURCE: Yubilaynaya konferentsiya po fiziko-khimicheskomu analizu.
Novosibirsk, 1960. Fiziko-khimicheskii analiz (Physicochemical analysis); trudy* konferentsii. Novosibirsk, Izd-vo Sib. otd. AN SSSR, 1963, 16-20

TOPIC TAGS: niobium, titanium, aluminum, niobium titanium aluminum system, niobium titanium aluminum alloy

ABSTRACT: Several series of Ti-Nb-Al alloys with compositions corresponding to $Ti-Nb_3Al$, $Ti-Nb_2Al$, and $Ti-NbAl_3$ sections of the composition triangle were melted in a tungsten-electrode arc furnace from 99.3% pure niobium, AV-000 aluminum, and TC-00 titanium. From the results of microstructural and x-ray diffraction analyses and hardness tests, the isothermal sections of the Nb-Ti-Al phase diagrams at 1200C (see Fig. 1 of the Enclosure), 1400C, and 20C were plotted. The distribution of phases at 1400C does not differ significantly from that at

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L 14396-65

ACCESSION NR: AT4046212

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1200C, except for a somewhat larger region of the β -solid solution. The following phases were identified: β -titanium-base solid solution, which decomposes at 750—800C, α -titanium-base solid solution, β_1 -Nb₃Al-base solid solution, σ -Nb₂Al-base solid solution, γ -TiNbAl₃-base solid solution, and Z-NbAl₃-base solid solution. The niobium-rich alloys are of no practical interest because they are extremely brittle and have a low rupture strength, but alloys of the γ -region are highly oxidation-resistant, strong, and castable. Orig. art. has: 4 figures.

ASSOCIATION: none

SUBMITTED: 10Sep63

ENCL: 01

SUB CODE: MM, SS

NO REF SOV: 002

OTHER: 002

ATD PRESS: 3136

Card 2/3

L 14396-65
ACCESSION NR: AT4046212

ENCLOSURE: 01

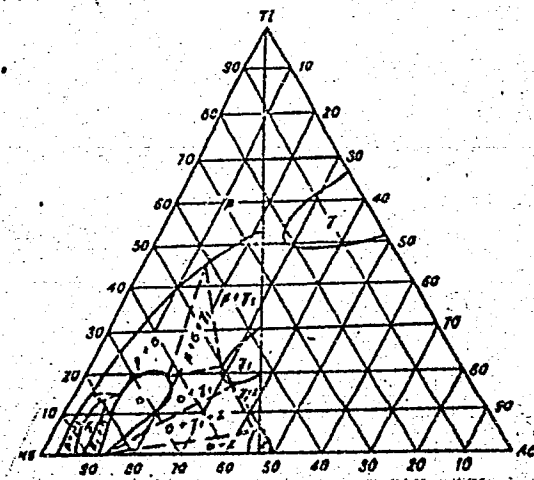


Fig. 1. Isothermal section of the phase diagram Nb-Ti-Al at 1200C.

Card 3/3

POPOV, I.A.

Electron microscope study of the elementary bodies of the influenza
virus A (PR-8) and A₂ (Asian strain). Trudy TashNIIVS 6:155-158 '61.
(MIRA 15:11)

(INFLUENZA—MICROBIOLOGY)

(ELECTRON MICROSCOPY)

POPOV, I.A.; RABEZOVA, V.I.

Phase equilibrium diagram of the niobium - titanium - aluminum
system. Zhur.neorg.khim. 7 no.2:436-439 F '62. (MIRA 15:3)
(Niobium-titanium-aluminum alloys) (Phase rule and equilibrium)

3862h

S/598/62/000/007/013/040
D244/D307

18.1285

AUTHORS: Popov, I. A. and Rabezova, V. I.

TITLE: Phase diagram of titanium-niobium-aluminum system and some properties of the alloys

SOURCE: Akademiya nauk SSSR. Institut metallurgii. Titan i yego splavy. no. 7, Moscow, 1962. Metallokhimiya i novyye splavy, 105-109

TEXT: The object of the work was to investigate interaction of the components of ternary system Ti-Nb-Al and to construct a phase diagram for it. Thermal microstructural and X-ray analysis of the phase composition of the alloys with up to 50% weight Al show relatively large areas of solid solutions formed at 1200 - 1400°C based on compounds Nb_3Al and Nb_2Al . The presence of a solid solution based on $NbAl_3$ was also established. Compound Nb_3Al was formed by peritectic reaction at 2060°C; Nb_2Al and $NbAl_3$ formed from the melt at 1800°C and 1750°C respectively. The alloys corresponding to the Card 1/2

POPOV, I.A.

PHASE I BOOK EXPLOTTATION

SOV/5934

Zakharova, Galina Vasil'yevna, Ivan Alekseyevich Popov, Liliانا Pavlovna Zhorova,
and Boris Vladimirovich Fedin

Niobiy i yego splavy (Niobium and Its Alloys) Moscow, Metallurgizdat, 1961.
368 p. Errata slip inserted. 3700 copies printed.

Eds.: Ye. M. Savitskiy and A. S. Stroyev; Ed. of Publishing House: M. S.
Arkhangel'skaya; Tech. Ed.: A. I. Karasev.

PURPOSE: This book is intended for scientific research workers, metallurgical engineers
and designers concerned with the production or utilization of niobium. It
may also be useful to students at metallurgical schools of higher education.

COVERAGE: The book reviews the physicochemical and mechanical properties of
niobium and niobium alloys, methods of obtaining niobium in powder and con-
solidated form, the effect of gases on the properties of niobium, the
process of niobium oxidation in air, the machining and heat treatment of
niobium and its deformation, welding, metallography, and fields of application.

Card 1/8

POPOV, I.A.; RODIONOVA, N.G.

System niobium - molybdenum - zirconium. Zhur.neorg.khim. 9
no.4:890-899 Ap '64. (MIRA 17:4)

BORZUNOV, N.A.; KUZ'MINA, N.Ya.; NEVYAZHSKIY, I.Kh.; OSOVETS, S.M.;
PETROV, Yu.F.; POLYAKOV, B.I.; POPOV, I.A.; KHODATAYEV, K.V.;
SHIMCHUK, V.P.

Studying a plasma on a traveling wave setup. Dokl. AN SSSR 152
no.3:581-584 S '63. (MIRA 16:12)

1. Predstavleno akademikom A.L.Mintsem.

POPOV, I.A.; SHIRYAYEVA, N.V.

Phase diagram of the niobium - copper system. Zhur.neorg.khim.
6 no.10:2334-2340 0 '61. (MIRA 14:9)
(Niobium) (Copper)

33281

18.1200 1418 4016 1521

S/078/62/007/002/016/019
B127/B110

AUTHORS: Popov, I. A., Rabezova, V. I.

TITLE: Study of the phase diagram in the Nb-Ti-Al system at equilibrium

PERIODICAL: Zhurnal neorganicheskoy khimii, v. 7, no. 2, 1962, 436 - 439

TEXT: The authors studied the phases of the system Nb-Ti-Al, since corresponding data have not been published. Debye-Scherrer patterns, microstructure, hardness, and microhardness were studied. At 1200 - 1400°C, the region of solid solutions on the basis of Nb_3Al and Nb_2Al was found to be wide at an aluminum content of 50% by weight. Nb_3Al is thus formed in a peritectic reaction at 2060°C, Nb_2Al and $NbAl_3$ form from the melt at 1800°C and 1750°C, respectively. Solid ternary solutions on the basis of Nb_3Al , Nb_2Al , $NbAl_3$, and $TiNbAl_3$ occupy a wide region. The isothermal intersection of the phase diagram holds for the concentration triangle Nb-Ti- $NbAl_3$ at 1400°C, 1200°C, and 20°C. The character of phase

Card 1/1 2.

POPOV, I.A., dotsent, kand.tekhn.nauk

Developing the analytic study of the working surface of a plow according to its given parameters. Trudy MIMSKH 4 no.1:159-183 '59.

(MIRA 13:10)

(Plows)

SNAGOVSKIY, Yevgeniy Stefanovich, kand.tekhn.nauk; BAKANOV, Konstantin
Fedorovich, inzh.; GERCHIKOV, Ioel' Solomonovich, kand.tekhn.
nauk; PISAREV, Andrey L'vovich, inzh.; POPOV, Igor' Aleksandrovich,
kand.tekhn.nauk; MIRSKEYA, V.V., red.izd-va; LOMILINA, L.N.,
tekhn.red.; KONDRAT'YEVA, M.A., tekhn.red.

[Automatization in underground transportation] Avtomatizatsiia na
podzemnom transporte. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po
gornomu delu, 1960. 276 p. (MIRA 13:12)
(Mine haulage) (Automatic control)

83656

S/108/60/015/001/006/006
B012/B067

9.4310 (2104, 1143, 1160)

AUTHOR: Popov, I. A., Member of the Society

TITLE: Thermal Processes in Semiconductor Junction-type Triodes

PERIODICAL: Radiotekhnika, 1960, Vol. 15, No. 1, pp. 72-77

TEXT: The present paper deals not only with steady but also with unsteady thermal processes. The author wanted to determine the function (1): $t_j^0(P_1, t, t_m^0)$, where t_j^0 denotes the temperature of the junction, t_m^0 the temperature of the surrounding medium, t - time, and P_1 the leakage power in the triode. Equivalent circuits for the thermal processes in the semiconductor junction-type triode are constructed. First, triodes whose casings cool at the expense of thermal conductivity, then triodes whose bodies cool as a result of convection, are studied. For the former case formulas (2) and (3) are written down for the steady operation upon which the equivalent circuit shown in Fig. 1 is constructed. The investigation of thermal processes under transition conditions is very complex. Due to this fact the problem is solved on the basis of experimental data. The

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APPROVED

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Thermal Processes in Semiconductor Junction-type
Triodes

S/108/60/015/001/006/006
B012/B067

construction of the equivalent circuit was based upon the diagram shown in Fig. 2 and the diagram obtained experimentally. It gives the curves for the change in time of t_j^0 on cooling of the junction after the power P_j heating the triode is switched off. The method which is used to construct these diagrams is described in the appendix. In all $t_j^0(t)$ curves for different triode types, two sections are distinguished. One is the section with rapid temperature decrease and the other the section with subsequent slow temperature decrease. This characteristic curve allows the assumption of the equivalent circuit of Fig. 3 for thermal processes. This circuit contains only two thermal capacitors and two thermal resistors. In convective heat exchange, the temperature drop is expressed by formula (4). However, the nonlinear character of this function renders the computation difficult even for a steady mode of operation. It is shown that under certain premises formula (3) can be used in practice, and that in this case the equivalent circuits 1 and 3 hold also for cooling by convection. Finally, the averaged parameters of the equivalent circuits shown in Fig. 3 for some domestic triode types are given. These

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83656

Thermal Processes in Semiconductor Junction-type S/108/60/015/001/006/006
Triodes B012/E067

parameters were found experimentally. On the basis of this table some conclusions are drawn for the practice. There are 8 figures, 1 table, and 4 references: 1 Soviet and 1 German.

SUBMITTED: October 10, 1958

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Card 3/3

MOSHKEVICH, Yevgeniy Itskovich; POPOV, I.A., red.; VENETSKIY, S.I.,
red.izd-vn; ~~W~~VENUSON, I.M., tekhn.red.

[Progressive practices in making high-alloy steels at the
"Dneprospetsstal'" Plant] Peredovoi opyt vyplavki vysokolegi-
rovannykh stalei na zavode "Dneprospetsstal'." Moskva, Gos.
nauchno-tekhn.izd-vo lit-ry po chernoi i tsvetnoi metallurgii,
1960. 37 p. (MIRA 13:5)
(Zaporozhye--Steel alloys--Metallurgy)

9.4310

77184

SOV/108-15-1-10/13

AUTHOR: Popov, I. A.

TITLE: Thermal Processes in Planar-Junction Transistors

PERIODICAL: Radiotekhnika, 1960, Vol 15, Nr 1, pp 72-77 (USSR)

ABSTRACT: The paper investigates changes with the time t in the temperature t_j of transistor junctions, when the ambient temperature t_a and the power P_d dissipated by the transistor are known. The heat transfer from junction to the transistor framework depends on the conductivity of the germanium crystal and on the elements connecting the crystal to the framework. The heat may be removed from the framework either by conductivity, when the framework is fixed on a chassis or on a radiator, or by convection, when air-cooling is used. The cooling through conductivity depends on temperature t_k^0 of the framework surface in contact with the chassis or radiator. It depends also on the ambient temperature t_a . For stationary conditions it may be

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Thermal Processes in Planar-Junction
Transistors

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SOV/108-15-1-10/13

written $P_d = (t_j^o - t_k^o)/R_{jk}$ (Eq. 2)
and $P_d = (t_k^o - t_a^o)/R_{ka}$ (Eq. 3), where R_{jk} is a constant
coefficient determined by the construction of the ele-
ments constituting a thermal conductor between junctions
and the framework; similarly, R_{ka} is a constant coeffi-
cient determined by the elements constituting a thermal
conductor between the framework and the ambient medium.
 R_{jk} and R_{ka} are called "thermal resistance"; their
dimension is in degrees/watt. The expression for P_d
may be represented by an equivalent electrical circuit
as shown in Fig. 1.

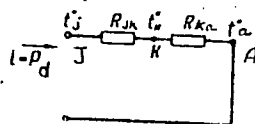


Fig. 1.

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Thermal Processes in Planar-Junction
Transistors

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Here, the current i is proportional to P_d ; the resistance R_{jk} and R_{ka} are proportional to the corresponding thermal resistances; and the voltages at the points K and J are proportional to the corresponding differences in temperatures: framework-ambient medium and transistor junction-ambient medium. The transient conditions taking place after the power supply is disconnected are represented graphically by plotting t_j^0 as a function of time. The curves obtained for various transistors show two sections approaching an exponential form. Based on this an equivalent electrical diagram for transient conditions may be represented as shown in Fig. 3.

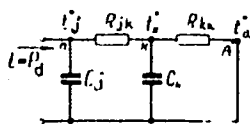


Fig. 3.

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Thermal Processes in Planar-Junction
Transistors

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Here, the capacitance C_j represents the thermal capacity of the transistor parts situated near the junctions, whereas C_k represents the thermal capacity of the entire framework. Since the mass of the parts near the junctions is relatively small, these parts are rapidly cooled to the temperature t_k^0 . Then the framework and the junctions cool jointly down to the ambient temperature t_a^0 . These cooling processes are characterized by the time constants $\tau_j = C_j R_{jk}$ and $\tau_k = C_k R_{ka}$. When cooling is by convection the heat exchange is given as $P_d = (\Delta t_{ka})^n / R_{kao}$, where $\Delta t_{ka} = t_k^0 - t_a^0$; R_{kao} is a constant coefficient depending on the shape and dimensions of the heat exchanging surface S , and n may be assumed as 1.25 when $0.1 \text{ cm}^2 < S < 200 \text{ cm}^2$. It is shown that the nonlinear expression for P_d may be replaced by a linear given as Eq. (3), if $R_{ka} = \Delta t_{ka}^0 / P_d$ is calculated for an average temperature difference

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Thermal Processes in Planar-Junction
Transistors

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SOV/108-15-1-10/13

characteristic for operating conditions. This simplification makes it possible to apply the above equivalent circuits also to the case of cooling through convection. Values of R_{jk} , τ_{jk} , R_{ka} , τ_{ka} and $R_{ja} = R_{ka} + R_{jk}$ are given in a table form for various types of Soviet transistors. Methods of measuring transistor thermal parameters in the equivalent circuit are described in an appendix. There are 8 figures; 1 table; and 4 references, 1 Soviet, 1 German, 2 U.S. The U.S. references are: K. E. Mortenson, Transistor junction temperature as a function of time; PIRE, Nr 4 (1957). J. Tellerman, Measuring transistor temperature rise, Electronics, Nr 4 (1954).

SUBMITTED: October 10, 1958

Card 5/5

SHVARTSMAN, L.A., doktor khim.nauk; TOMILIN, I.A.; TRAVIN, O.V.; POPOV, I.A.
kand.tekhn.nauk

Effect of alkaline earths on the distribution of sulfur between iron
and iron slag. Probl. metalloved. i fiz. met. no.4:577-594 '55.
(Alkaline earths) (Iron--Metallurgy) (MIRA 11:4)
(Sulfur)

AUTHORS: Zakharova, G.V., Popov, I.A., Zhorova, L.P. and Kurganov, G.V. SOV/136-59-1-16/24

TITLE: Use and Properties of Niobium (Primeneniye i svoystva niobiya)

PERIODICAL: Tsvetnyye Metally, 1959, ³²Nr 1, pp 73-79 (USSR)

ABSTRACT: After outlining the uses of niobium the authors tabulate some published (Refs 3,4) data on its physical properties. They discuss published data on the mechanical properties of the metal, noting divergencies and the absence of high-temperature (over 550°C) data, and describe their own experiments in this field. These gave more accurate room-temperature and also some high-temperature values for the cast metal. Ingots were prepared by melting 99.6-% (Nb + Ta) rods in a VIAM arc furnace at a pressure of 10^{-4} mm Hg. The ingots were deformed to 70-80% after annealing at 10^{-4} mm Hg and 1800-2000°C to remove oxygen and other gases: results are given in Table 1, and at 1400-1600°C in argon or helium. Deformation was carried out under the direction of I.G. Skugarev and S.B. Pevzner.

Card 1/3 Fig 1 shows the microstructures of the cast (left),

Use and Properties of Niobium

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forged, (middle) and recrystallized (right) metal. The room temperature values of tensile strength, yield-point strength, relative elongation, reduction in cross-sectional area and the hardness are given in Table 2 for niobium in the cast, pressed and pressed-and-vacuum-annealed states; Table 3 gives data for 1000, 1050 and 1100°C. Fig 2 shows the change in the time to fracture at a constant stress of 15 kg/mm² for the deformed and for the cast metal while Fig 3 shows the modulus of elasticity, kg/mm², (left hand scale, triangles, points and crosses for hardened, deformed and recrystallized specimens) and the logarithmic damping decrement for recrystallized specimens. The moduli of elasticity were determined in the institut mashinovedeniya AN SSSR (Machine Institute of the AS USSR) under the direction of M.G. Lozinskiy. An interesting result is that the modulus does not decrease with increasing temperature; this may be due to the presence of impurities. It was found that (Table 4) with increasing oxygen content (from 0.02 - 0.24%) the tensile strength increases from

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53 to 103 kg/mm², the yield-point strength from 40 to 99.5 and Brinel hardness from 120 to 320, while the relative elongation falls from 26 to 10%. When the carbon-content of a specimen was increased to 0.3% the tensile strength fell somewhat while the relative elongation remained sufficiently high. In the specimens used the hydrogen, nitrogen and normal carbon-contents were 0.001-0.005%, 0.005-0.01% and 0.04-0.05%, respectively. Finally, the authors outline the oxidation of niobium as reported in English (Refs 8,10,11,12) and German (Ref 9) publications.

There are 5 figures, 4 tables and 12 references, 3 of which are Soviet, 8 English and 1 German.

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red.izd-va; MIKHAYLOVA, V.V., tekhn.red.

[Analysis of economic activity; program, practical instructions
and test assignments for correspondence students in schools of
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the metallurgical and chemical industry."] Analiz khoziaistvennoi
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zadaniia dlia uchashchikhsia zaachnykh otdelenii tekhnikumov
chernoi metallurgii po spetsial'nosti "Planirovanie na predpri-
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(Coal mines and mining)

137-1958-2-2345

Popov, I. A.

Translation from: Referativnyy zhurnal. Metallurgiya, 1958, Nr 2, p 20 (USSR)

AUTHORS: Shvartsman, L.A., Tomilin, I.A., Travin, O.V., Popov, I.A.

TITLE: The Effect of the Oxides of ~~Alkali~~ Earth Metals on the Distribution of Sulfur Between Iron and Ferruginous Slag (Vliyaniye okislov shchelochnozemel'nykh metallov na raspredeleniye sery mezhdu zhelezom i zhelezistym shlakom)

PERIODICAL: V sb.: Fiz.-khim. osnovy proiz-va stali. Moscow, AN SSSR. 1957, pp 304-318. Diskus., pp 332-334

ABSTRACT: The radioactive isotope S^{35} was used to study the dependence on the temperature of the distribution of S between Fe and a slag consisting of Fe oxides. The results are described by the equation

$$\lg K_s = \left(\frac{3000}{T} \right) - 1.05 ,$$

wherein K_s is the coefficient of distribution of S, computed as the ratio of the counting rate from the slag to the counting rate from the metal, the counting rates being computed by the thick-layer method. The MgO content of the ferruginous slag, so long as it did not exceed 7.76%, exhibited no influence either on the K_s value

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The Effect of the Oxides of ~~Alkaline~~ Earth Metals (cont.)

or on its dependence on temperature. With the maximum precision attainable in the experiment it was found that the CaO content, up to 12%, likewise did not alter the K_s value. For ferruginous slag containing more than 12% CaO it was learned that

$$\log K_s = \left(\frac{3700}{T} \right) - 1.26$$

This equation is correct for a CaO content up to 33%. The smallness of the effect exerted by the CaO on the K value is accounted for by the increase that occurred in the Fe_2O_3 concentration when CaO was introduced into the slag. For a slag containing 11.5 - 16.2% BaO, the equation obtained was $\log K_s = (3200/T) - 0.99$. From the dependence on temperature of K_s a computation was made of the heat effect of the desulfurization of the Fe by a slag consisting only of Fe oxides + 14 kcal/gram.atom, with addition of more than 12% CaO + 17 kcal/gram.atom and 11-16% BaO + 14 kcal/gram.atom. The smallness of the heat effect and the smallness of the difference between them when one oxide was substituted for another are accounted for by the absence in ferruginous slags of any specific chemical reaction of oxides of Ca, Ba, and Mg with S.

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I.T.

1. Sulfur--Distribution 2. Iron--Applications 3. Slag--Applications
4. Alkaline earths--Oxidation--Effects

GRUM-GRZHIMAYLO, N.V.; POPOV, I.A.

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